IN THE CLAIMS

Please AMEND claims 1, 3, 8, and 9. Claims 12-18 are NEW. No new matter has been added.

1. (Currently amended) The method of claim 8, the method utilizing a model system comprising:

a. the ~~a~~ base model;

b. an input device for inputting well logging data into the base model;

c. an input device for inputting pressure transient data into the base model;

d. an input device for inputting PVT data into the base model;

e. a numerical interpreter for calculating the predicted performance of the well;

f. a match system for comparing the actual performance data with the calculated predicted performance data based on the base model; and

g. a reiterative loop for modifying the base model to provide a match between the actual performance data and predicted performance data to optimize the base model.

2. (Previously presented) The method of claim 1, further including a data editing module for editing the pressure transient data before it is input into the base model.

3. (Currently amended) The method of claim 1, further including a plotting device for plotting the data generated by the model system.

4. (Previously presented) The method of claim 3, wherein the plotting device is adapted for plotting line fitting on specialized plots.

5. (Previously presented) The method of claim 3, wherein the plotting device is adapted for plotting specialized plots providing preliminary estimates of performance data based on the base model.

6. (Previously presented) The method of claim 3, wherein the plotting device is adapted for generating a 3D display of the well.

7. (Previously presented) The method of claim 3, wherein the plotting device is adapted for generating performance data plots based on the optimized model.

8. (Currently amended) A method for generating optimized performance data in a subterranean well, comprising the steps of:

a. introducing known pressure transient data, well logging data, an induced fracture height and perforation length, and PVT data for the well into a base model~~, wherein the PVT data comprises perforation length and height of a fracture~~;

b. producing a performance prediction from the base model;

c. comparing the performance prediction with actual performance; and

d. modifying the model to generate a performance prediction that matches the actual performance for producing an optimized model.

9. (Currently amended) The method of claim 8, wherein the PVT data ~~further~~ comprises data for a number of layers involved in the well modeled.

10. (Previously presented) The method of claim 8, wherein the optimized model is generated by comparing the performance prediction and the actual performance for a first, known zone and wherein the optimized model is utilized to predict performance data for an unknown zone.

11. (Previously presented) The method of claim 10, wherein the model is repeatedly optimized as actual performance data for multiple zones is collected.

12. (New) The method of claim 8, the method further comprising determining the induced fracture height and perforation length according to pressure data observed in conjunction with a fracture treatment.

13. (New) The method of claim 12, wherein the PVT data varies within the induced fracture.

14. (New) The method of claim 8, the method further comprising introducing non-Darcy factors into the base model.

15. (New) The method of claim 14, wherein the non-Darcy factors comprise compensation for turbulent gas flow in a fracture.

16. (New) The method of claim 8, wherein the actual performance comprises a pressure transient.

17. (New) The method of claim 8, wherein the actual performance comprises a production value.

18. (New) The method of claim 8, wherein the pressure transient data comprises pressure transient data resulting from a mini-frac test.